

A Few Notes on Methodology

- We pulled together data from two tables: One table was the FEMA disaster declarations summaries and the other table was 5-year ACS data for the U.S. We included Puerto Rico, but no other territories.
- To join the two tables, we matched the FEMA county ID to the Census geographic ID and the year of when the disaster began within the FEMA data to the last year of the 5-year ACS data. For example, if a disaster occurred in Fairfax County, Virginia, on June 4, 2013, we joined it to the 2009-2013 ACS data for Fairfax County, Virginia.
- We looked at disasters with incident dates starting in 2009 through 2018 and 5-year ACS data for 2009 through 2017. For disaster declarations in 2018, we used 2017 census data, the latest available. We only looked at disaster declarations that FEMA classified as “major.”
- This does not necessarily include all areas impacted by major disasters. Research shows that sometimes politics affects which counties receive disaster declarations. We chose to use this dataset because it is the best available and most consistent information for domestic disasters over the last decade.
- For our “white” and “nonwhite” categories, we classified “white” as non-Hispanic white and all other ethnicity and race combinations as non-white.
- We excluded declarations for Regional Educational Attainment Areas, a county equivalent used for certain Alaska declarations that lack a direct equivalent in Census data. That accounted for roughly 20 entries. We also excluded roughly 30 other county areas that didn’t match with the Census data. Taken together, these numbers wouldn’t significantly impact the findings since there are 9,275 rows of declared county areas, each representing an area impacted by a disaster.
- For purposes of this data memo, the terms “disaster zones” and “disaster areas” will be used to refer to counties, independent cities or tribal reservations that received a disaster declaration.
- For examining regions in disasters, we used the U.S. Census Bureau’s own region designations that can be found [here](#).
- For examining the types of disasters, we used the FEMA designation of a disaster, the “incidenttype” field in the FEMA data. So for example, some severe storms also had flooding and vice versa, but we used FEMA’s choice of labelling for the events.
- We plan to include a number of data caveats that we discussed, generally getting at the idea of how much we don’t know. We’ll place the findings in context in our story and will go into greater detail in our methodology. Here are some of the ideas we’re planning to include (wording will likely change):
 - Census ACS 5-year data is a survey that measures population over five years, with roughly the same number of respondents sampled in each of the five years. As such, roughly four-fifths of each year’s data overlaps with both the preceding year’s data and the succeeding year’s data. Therefore, we intend to exercise caution when assessing changes in the demographics of a county between two years whose ACS data overlaps (e.g. comparing the demographics of Fairfax County, Virginia, in 2010 to its characteristics in 2014).

- o The factors we focus on, like age or income, are only some of the widely accepted ways that people can be vulnerable. What makes one person vulnerable may not mean the same for another.
- o While this data shows which areas had access to federal funds opened by major disaster declarations, it doesn't on its own show who was most impacted by these disasters. Tornadoes can concentrate damages in one part of a county, for example. The demographics of the people such a disaster affected may not match the demographics of the entire disaster zone. Still, lack of more precise data means this is one of the few ways we can shed light on the people affected by disasters.
- o To examine vulnerability, we compared a disaster zone's characteristics – populations or strength of economy – to the U.S. overall. These findings reflect whether a disaster area's census data indicated higher vulnerability than the U.S. but does not assess how much higher that vulnerability appears.
- o Lastly, while disasters may disrupt people's lives – forcing them to move, rebuild, go into debt – how people recover also depends on what their life was like before the disaster hit. People often aren't set up to equally survive equal damages.

Center for Public Integrity disasters findings memo

From 2009 through 2018, the federal government issued 601 “major” disaster declarations for natural disasters that hit the U.S., a designation that can open millions of dollars in funding for recovery.

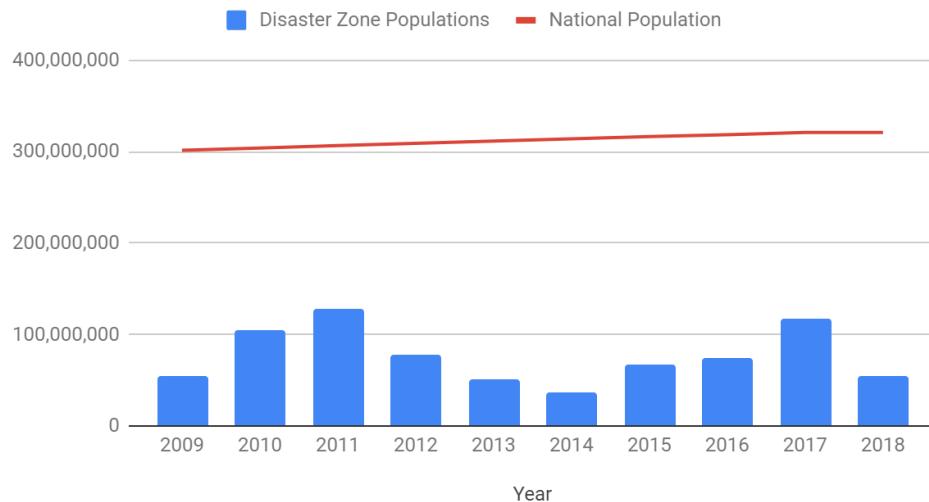
The Center combined 578 of these with Census Bureau data that reflected who lived in the area when the disaster struck, excluding certain Alaskan and other declarations when there wasn’t a clear match. The 578 major disaster declarations reached 2,923 counties, independent cities and tribal reservations. Roughly 80 percent of areas with a major disaster over this period (2,370) got hit more than once. About 89 percent (2,859) of the counties, county equivalents and independent cities in the continental U.S. and Puerto Rico were hit at all.

The majority of the 578 declarations were classified by the Federal Emergency Management Agency as severe storms and flooding (311 and 109, respectively).

Most of these declarations were issued for disaster zones in the South as defined by the Census Bureau, which received 216 declarations over the course of the decade. Disaster zones in the Midwest received the second most with 142; disaster zones in the west received 111; and the Northeast received 102.

Last year alone, 17 percent of the U.S. population, or about 55 million people, lived in areas hit by disasters deemed “major” by the federal government. In 2011, a particularly bad year, these kinds of disasters hit counties, independent cities and reservations containing 42 percent of U.S. residents — 127 million people in all. Even in the lowest year, 2014, roughly one in nine Americans lived in an area hit by a disaster.

The Number of People Living in Disaster Zones and in the U.S.



Not everyone has an equal chance of preparing for, surviving and recovering from a disaster.

And as climate change gets worse, there will be more damaging and frequent natural disasters to deal with. So the Center tried to answer the question: Who has been in these disasters' paths? We found that some vulnerable populations, like the poor and elderly, have been overrepresented in areas hit over the last decade. The rest of our series will focus on how our governments are protecting the most vulnerable people and who is losing when it comes to climate linked-disasters.

To do this, the Center for Public Integrity combined and analyzed government datasets to understand how vulnerable people living in these disaster zones were compared to the U.S. overall, examining seven factors: race, income, unemployment, children under age 5, people 65 and older, homeownership and food stamp use. Academics have linked at least two dozen social characteristics to disaster vulnerability. We chose to focus on a key subset representing varied kinds of vulnerability.

Any one of the factors the Center analyzed could lead to a person needing additional help before, during or after a disaster. The more factors a disaster zone has, the more likely its people are particularly vulnerable to being harmed by disasters. The Center examined each disaster area each time it was hit. The Center assessed whether a disaster area had a higher share of vulnerable populations, worse unemployment rates or lower median household incomes than the U.S. the year the event occurred. If it did, the Center labeled it highly vulnerable for that factor.

Most disaster zones in the last decade for the 578 declarations that the Center analyzed had two, three or four of the factors that indicate a likely higher need for support than other parts of the U.S. Some had five, six or even all seven of these

factors at once — that was true of 21 percent of disaster zones in 2018, for instance.

- A total of 46 disaster zones with the highest possible vulnerability — an area with higher vulnerability than the U.S. in all seven factors — were hit over the last decade. Thirty-nine of those were in the South.
- About 28 percent, or 660, disaster zones hit multiple times over the last decade were highly vulnerable for at least one of those hits (meaning five, six or seven factors showing they were more vulnerable than the U.S.).
- Three areas with the highest possible vulnerability compared to the U.S. were hit four times in the last decade: Natchitoches Parish, La.; Perry County, Ala.; and Crisp County, Ga. No areas were hit more times in years that all seven of their factors indicated higher than the U.S. vulnerability.
- Georgia had 12 declared disaster areas hit when they had the highest possible vulnerability, the most of any state over that decade. Some were hit multiple times, like Crisp County. (Some counties in Georgia were hit more repeatedly but had fewer vulnerability characteristics, including Upson County and Baker County, each hit six times.)
- Among places with all seven factors indicating higher than U.S. vulnerability at some point in the last decade, Benson County, N.D., was hit by disasters the most: a bruising eight times.
- Among tribes with a seven vulnerability factors indicating high vulnerability at some point when they were hit in the last decade, the Colville Indian Reservation in Washington state received the most disasters — four.
- The state of Oklahoma received the most major declarations of any state over this period, 24 in all. The majority of Oklahoma's disaster areas had three, four or five factors indicating potentially higher vulnerability than the U.S.
- No state in the Northeast had a disaster zone over the last decade that was hit when it had the highest possible vulnerability. Essex County, New Jersey, was hit the most times — seven — of any county in the Northeast that during at least one of those disasters had six indicators of vulnerability. Philadelphia County, Pennsylvania, and Kings County, New York, were hit five and four times respectively over the decade, and each had six factors indicating high vulnerability during most or all of those disasters.

Some of the vulnerability indicators were more prominent than others across this decade of disasters. The Center found larger shares of poor and elderly residents in many disaster zones than in the U.S. as a whole over the decade-long period. More on those findings and others:

- At least 72 percent of disaster zones in any given year had larger shares of elderly residents than the U.S. percentage. No fewer than 5 million elderly individuals lived in these disaster zones each year, in one year reaching more than 17 million people 65 years or older. (The share of elderly individuals in *all* disaster zones was roughly the same as the U.S. proportion overall.)
- Most years, three quarters or more of the disaster zones had typical household incomes that fell below what the typical American household was earning. Cost of living differences explain only part of this discrepancy. In

eight of the 10 years examined by the Center, more than half of all disaster zones also had higher proportions of their households relying on food stamps than in the U.S. And more than half had higher unemployment rates than the U.S. in eight of the years examined by the Center.

- These places tended to be less diverse. In most years of the past decade, three quarters or more of disaster zones had higher proportions of white individuals, not including those who were Hispanic or Latino, than the U.S. as a whole. In some years, people of color made up as little as 28 percent of residents in the disaster areas. But in 2017, 48 percent of people living in disaster zones, 57 million in all.
- Hurricanes showed some different patterns. Most disaster zones hit by these storms still had larger proportions of elderly and lower median household incomes than the U.S., but they were more likely than other common major disasters to affect areas with substantial shares of non-white people. Of the 21 places included in major disaster declarations for hurricanes in 2010, for instance, 18 of them had higher proportions of people of color than the U.S.